

ASSESSING EMPLOYMENT NEEDS
IN
AGRIBUSINESS FIRMS

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One of the most important aspects of vocational education is that it leads to job placement. The people who are planning and conducting vocational education programs must consider the employment needs of the industries for which training is being provided.

New technology and urban living patterns are affecting employment in agribusiness. The impact of these trends is: First, the number of persons employed full-time on farms has decreased; and second, a varied and expanding non-farm agricultural industry is developing.

All businesses providing inputs of production, processing and distribution of agricultural products are defined as agribusiness. The production of food and fiber has evolved from a primarily self-sufficient production agriculture to a highly mechanized and specialized industry which requires an increasing amount of input and output services. Today's farmers and ranchers may have their cows artificially inseminated by a specialist, have fertilizer applied by an agrichemical company and farm business records analyzed by a computer. Processing and distribution of farm products may involve processing a single farm product into several forms for consumer use. Controlled storage now makes seasonal crops such as strawberries available on a year-round basis. Consumer demand for conveniently packaged and ready to serve foods has further increased the need for processing and distribution services.

The Need for Trained Workers in Agribusiness

The increased technology of agribusiness has demanded a corresponding increase in the training level of agribusiness workers. At the same time, the rapidly growing array of businesses and industries providing supply, production, processing, and distribution services to agricultural production has required trained workers to be available in increasing numbers.

To meet the employment needs of new and expanding agribusinesses, vocational education in agriculture has developed specialized vocational education programs. Today, the United States Office of Education recognizes eight specialty areas of vocational education in agriculture.¹ In Indiana, the State Board for Vocational and Technical Education compares employment supply and demand information in its annual state plan. The current state plan for vocational and agricultural education in Indiana is based on incomplete data. The 1977 plan notes, "Available data does not accurately project expansion and replacement needs in the area of agriculture."

In addition to the need for current program planning information, the 1976 Vocational Education Act called for employment needs data based on standard employment classifications and statistically sound procedures. A study was conducted in Indiana to obtain information that could be used in planning vocational agriculture programs.

Objectives

The primary purpose of the study reported here was to provide a source of current employment data for Vocational Agricultural programs. The specific objectives of the study were:

1. Identify the types of businesses which employ workers at the entry level who are required to have had agricultural experience. These businesses would be in the areas of agricultural production, agricultural supplies, agricultural mechanics, agricultural products, ornamental horticulture, agricultural resources, and forestry.
2. Identify the number of employees needed to fill entry level positions as replacements in agriculture related business who are required to have had agricultural experience.
3. Identify the number of employees needed to fill entry level positions because of expansion by agriculture related businesses.

¹The eight areas for agriculture are: production agriculture, agricultural supplies and services, agricultural mechanics, agricultural products, horticulture, forestry, natural resources, and other areas of agriculture.

4. Design and test a random sampling procedure for gathering employment needs data for agribusiness. The development of this model will facilitate future employment needs assessment.
5. The procedure designed will meet the 1976 vocational act's requirement for employment needs data based on standard classifications and statistically sound procedures.

Method

A questionnaire to assess agribusiness employment needs was developed and sent to 469 Indiana agribusinesses.

Input from a review of literature, agricultural education staff at Purdue University, a state-wide steering committee, the research division of the Indiana Employment Security Office and field test results contributed to the design of the study.

A population of agribusinesses was determined by the Standard Industrial Classification codes agricultural classifications. This list was furnished by the research division of the State Employment Security Office. This preliminary list of agribusinesses was validated by a county task force committee in each selected county. The local task force committees were comprised of teachers of agriculture, extension personnel, farmers and representatives of agribusiness.

A stratified random sample of 10% of the agribusinesses in 14 Indiana counties formed the basis for data collection.

The fourteen counties were chosen at random with replacement by the steering committee. Stratifications for randomized selection were made by business area using the U.S. Office of Education taxonomy and by county type using a demographic definitions of percent urban population and economic region. The 14 counties of the sample represented each of the 14 economic planning regions of Indiana and included 4 rural, 4 suburban, 4 urban, and 2 city counties.

The four mailings of questionnaires utilized a token gift, optimum mailing dates, colored questionnaires, and cover letters from local agriculturalists to obtain a 74% return rate. A follow-up by telephone of 10 percent of the non-respondents did not show bias.

The employment needs of the sample formed the basis for projecting 1977-1981 agribusiness employment needs.

Statistical tests were employed to measure the impact of the stratifications used in sampling.

Analysis of variance scores were computed for the employment needs of rural, suburban, urban, and city counties. Chi-square was used to determine if the stratifications by business area and economic region were necessary to achieve a random sample.

Findings

This study was a descriptive investigation of employment needs of agribusiness. In addition to providing employment needs data, the study followed the procedures for vocational program job demand data as recommended by the 1976 Vocational Education Act. In accordance with the 1976 Act, the study developed procedures for obtaining agribusiness employment needs information which was based on standard employment classifications and statistically tested techniques of sampling.

The findings of employment needs are as follows:

1. High school level agribusiness employment needs were found for each agribusiness area of the U.S. Office of Education taxonomy.
2. Within agribusiness areas, vocational agriculture program-related employment needs were found. As shown in Table 1, 137 of the 762 high school agricultural mechanics workers were needed by forestry businesses.
3. These findings which were made for each year 1977-1981, reported a growth in agribusiness employment of 2% per year.

The findings of the statistical tests of the studies sampling stratifications are as follows:

1. The variance of employment data collected from county groups created by the demographic classifications of counties suggested that among county groups, agribusinesses hired work forces requiring significantly different proportions of agricultural workers. This result demonstrated the need for demographic stratification when random samples of agribusinesses are used to determine employment needs.

Table 1

TOTAL AGRIBUSINESS EMPLOYMENT NEEDS FOR 1980 IN INDIANA
FOR
HIGH SCHOOL LEVEL WORKERS

Area of Agribusiness	High School Vocational Program Areas					
	Agricultural Supplies and Services	Agricultural Mechanics	Agricultural Products	Ornamental Horticulture	Forestry	Agricultural Resources
Agricultural Supplies and Services	530	115	175	21	0	11
Agricultural Mechanics	190	482	42	16	18	0
Agricultural Products	3	14	190	29	0	1
Horticulture	16	11	49	162	0	0
Forestry	389	137	26	0	204	1
Natural Resources	1	3	0	13	0	0
TOTALS	1129	762	482	241	222	13
Production Agriculture	Part-Time	2885	Full-Time	3125		

The demand for full-time employees with a high school-level education in 1980 is 5,974.

2. A similar comparison procedure was used to determine the need to stratify the population of agribusinesses by economic planning regions. With the Chi-square test, it was found that among the fourteen economic regions the observed number of agricultural employees did not vary significantly from the expected number. This demonstrated that economic region stratification is not necessary in selecting a random sample of agribusinesses.
3. The project's 10% sample of agribusinesses was taken from a population of businesses which were stratified by U.S. Office of Education program areas. A comparison of the proportion of agribusiness employees who need agricultural experiences between business groups was made. The Chi-square test indicated that stratification of businesses by type is a necessary component to the selection of a representative sample of agribusinesses.

Recommendations

Based upon the findings of this study, the following recommendations were made.

Recommendations for using data from the study:

1. Based upon worker demand data, it is recommended that continuing efforts be made to vocationally prepare production agriculture, agricultural mechanics, and ornamental horticulture workers at the high school level.
2. Increased and/or new efforts are recommended toward the development and establishment of agricultural supplies and services, agricultural products, and forestry as major instructional areas in high school vocational programs in Indiana.

Recommendations for using the procedures of the study:

The testing of the preliminary model for assessing employment needs resulted in worker demand data which indicated that the model is a viable one.

Recommendations for further study include the following:

1. For utilizing the findings of this study, techniques for determining employment needs for agribusinesses based on stratified random samples should continue to be developed.

2. Efforts should be made to provide valid measures of the supply of agribusiness workers being prepared by present vocational programs. In many cases, current enrollments are reported by classes attended, and one vocational student may attend two or more agricultural classes. This means that enrollment data may inflate actual supply. Procedures and studies are needed which relate current enrollment to actual supply of workers.

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